



EM Engineering & Technology: Reducing Technical Risks and Uncertainties in EM Projects

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Roadmap Implementation

- Multiyear Program Plan (MYPP) for Waste Processing developed to implement Roadmap
- Staff from national laboratories and site offices across the DOE complex has been involved in formulating the WP MYPP
- WP MYPP addresses:
 - prioritized work activities, required budget, schedule
 - major products/deliverables, performance metrics, and performer selection
- WP MYPP available on EM website



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Sharing Technical Expertise and Lessons Learned to Reduce Risk and Technical Uncertainties

- Technology Exchange meetings have assured maximum benefits from outcomes of R&D performed across the DOE complex
- Focused workshops
 - Cementitious Workshop December 2006
 - Aluminum/Chromium Workshop January 2007
 - Technical exchanges among Savannah River, Idaho and Hanford on waste processing projects held in March and October 2007
 - In-situ Decommissioning Workshop September 2007
 - Pilot Plant Lessons Learned Workshop December 2007
 - Proceedings posted on Waste Processing website
- Common Issues teleconferences have shared technical design, construction and operational experiences of mutual interest to EM waste projects
 - Cross Flow Filter Testing – sharing of test information among sites
 - Cesium Ion Exchange Research – future benefit to multiple sites
 - Technology Readiness Assessments – input for process development
 - Pulse Jet Mixers Erosion Wear – improving the testing parameters
 - Fire Resistant Structural Design – lessons learned in design
 - Waste Transport and Pipe Plugging - lessons learned from operations



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External Technical Reviews & Technology Readiness Assessments Help to Resolve Risks and Uncertainties

- High profile EM projects prompted the use of External Technical Reviews, for example
 - Tank 48 at Savannah River
 - Demonstration Bulk Vitrification System (DBVS) at Hanford
 - Salt Waste Processing Facility at Savannah River
 - Waste Treatment Plant (WTP) at Hanford
 - Groundwater and Soil Remediation at Hanford and Paducah
 - Hanford Environmental Restoration Disposal Facility (ERDF)
- Important to organize engineering and scientific expertise, through a structured review process to address difficult technical problems or resolve project management issues
 - External Technical Reviews support EM projects in addressing their risks and uncertainties
 - E&T works with Federal Project Directors to put together ETR charters and lines of inquiry using subject matter experts
 - Identify and document risks in Risk Management Plans
 - Incorporate Lessons Learned and Response Plans into EM projects
 - ETR and TRA Guidance Manuals currently being developed



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ETRs & TRAs (continued)

- o Technology Readiness Assessments along with development of technology maturity plans early in project key to reducing risks
 - Provides status of given technology relative to attributes described in each successive Technology Readiness Level (1-9) or, in other words, what development has been done at a given point in time
 - Provides a tool for DOE-EM to evaluate and communicate status of technology development in a consistent manner; process is structured and systematic
 - Developed by NASA; mandatory for DOD by Congress
 - GAO recommends TRA process for DOE (GAO-07-336); draft FY2008 House Language requires it
- o Eight Pilot TRAs conducted by DOE-EM to date
 - Hanford Waste Treatment and Immobilization Plant (WTP) Laboratory, Low Activity Waste (LAW) Facility and Balance of Facilities (3 TRAs)
 - WTP High-Level Waste Facility
 - WTP Pre-Treatment (PT) Facility
 - Hanford River Protection Project Low Activity Waste Treatment Alternatives
 - Hanford K Basins Sludge Treatment Process
 - Savannah River Tank 48H Waste Treatment Technologies



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Value of Technical Workshops

- Opportunity for education, training and learning from the best minds available
- Reduces Technical Uncertainty
 - Defines current state of technology and identifies gaps
 - Maximizes development of constructive alternative strategies
- Captures participants lessons learned experience
 - What is working best
 - What is not working and why
- Helps to integrate DOE infrastructure
 - Diminishes duplication of effort
 - Promotes consistency in approach to problem solving



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High-Level Waste Corporate Board

Purpose:

- Integrate the Department's High-Level Waste management and disposition activities across the complex;
- Identifies the need for and develops policies, planning, standards and guidance;
- Evaluates the implications of High-Level Waste issues and their potential impact across the complex.



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High-Level Waste Corporate Board

Activities:

- Has had two meetings since creation this year (2008), a third is planned;
- Will be leading preparation of guide for Performance Assessments;
- Publishes newsletter found at:
<http://www.em.doe.gov/Pages/HLWCorpBoard.aspx>.



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High-Level Waste Corporate Board

Membership

- Engineering and Technology, (Chair);
- Waste Processing, (Deputy Chair and Executive Secretary);
- Regulatory Compliance;
- Office of River Protection, Savannah River, Idaho, and Richland;
- Chief of Operations Office.

Advisors from

- National Laboratories;
- Field Offices;
- Office of Safety Management and Operations;
- Office of Nuclear Engineering;
- Office of Civilian Radioactive Waste Management.



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Conclusions

- Roadmap identifies strategies to reduce risks and improve technologies and processes at EM sites.
- External Technical Reviews have been proven useful in supporting critical project management decisions.
- Technology Readiness Assessments are a promising tool to delineate technical risk. Technology Maturity Plans are key to reducing project risk.
- Broader collaboration through technical exchanges are needed to ensure mission success
- HLW Corporate Board ensures coordination across DOE complex on strategic issues



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